

# ANALYTICAL BIOCHEMISTRY

**Methods in the Biological Sciences**

Volume 277, 2000

EDITOR-IN-CHIEF

William B. Jakoby

EXECUTIVE EDITORS

Assistant to the Editor-in-Chief, William S. Allison

Shelby L. Berger

Owen W. Griffith

Irving Listowsky

Ludwig Brand

Ueli Gubler

Walter M. Lovenberg

George M. Carman

John A. Hanover

Peter McPhie

Catherine E. Costello

Carlos B. Hirschberg

Richard N. Perham

Prescott Deininger

Robert Ivarie

B. David Stollar

Howard Goldfine

Maria C. Linder

M. H. V. Van Regenmortel

Alvin Nason, Founding Editor, 1960–1977

Nathan O. Kaplan and William D. McElroy, Editorial Committee Co-Chairmen, 1978–1986



**ACADEMIC PRESS**

A Harcourt Science and Technology Company

Copyright © 2000 by Academic Press  
All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the Publisher. *Exceptions:* Explicit permission from Academic Press is not required to reproduce a maximum of two figures or tables from an Academic Press article in another scientific or research publication provided that the material has not been credited to another source and that full credit to the Academic Press article is given. In addition, authors of work contained herein need not obtain permission in the following cases only: (1) to use their original figures or tables in their future works; (2) to make copies of their papers for use in their classroom teaching; and (3) to include their papers as part of their dissertations.

The appearance of the code at the bottom of the first page of an article in this journal indicates the Publisher's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (222 Rosewood Drive, Danvers, Massachusetts 01923), for copying beyond that permitted by Sections 107 or 108 of the U. S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-2000 articles are the same as those for current articles.

0003-2697/00 \$35.00

MADE IN THE UNITED STATES OF AMERICA

This journal is printed on acid-free paper.





# CONTENTS OF VOLUME 277

Number 1, January 1, 2000

|                                                                                                                                                                       |                                                                                                                                                                                  |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Aluminum Modifies the Viscosity of Filamentous Actin Solutions as Measured by Optical Displacement Microviscometry                                                    | <i>Eric J. Arnoys and Melvin Schindler</i>                                                                                                                                       | 1   |
| The Use of Fluorogenic Substrates to Monitor Thrombin Generation for the Analysis of Plasma and Whole Blood Coagulation                                               | <i>Manoj K. Ramjee</i>                                                                                                                                                           | 11  |
| Hyaluronic Acid and Chondroitin Sulfate Unsaturated Disaccharides Analysis by High-Performance Liquid Chromatography and Fluorimetric Detection with Dansylhydrazine  | <i>Nicola Volpi</i>                                                                                                                                                              | 19  |
| Intracellular Measurements in Mammary Carcinoma Cells Using Fiber-Optic Nanosensors                                                                                   | <i>Brian M. Cullum, Guy D. Griffin, Gordon H. Miller, and Tuan Vo-Dinh</i>                                                                                                       | 25  |
| An Assay for High-Sensitivity Detection of Thrombin Activity and Determination of Proteases Activating or Inactivating Protease-Activated Receptors                   | <i>Ludger M. Altrogge and Denis Monard</i>                                                                                                                                       | 33  |
| Under Proper Control, Oxidation of Proteins with Known Chemical Structure Provides an Accurate and Absolute Method for the Determination of Their Molar Concentration | <i>Claude Guermant, Mohamed Azarkan, Nicole Smolders, Danielle Baeyens-Volant, Michelle Nijs, Claudine Paul, Jeanne Brygier, Jean Vincentelli, and Yvan Looze</i>                | 46  |
| Production of Fab Fragments of Monoclonal Antibodies Using Polyelectrolyte Complexes                                                                                  | <i>Maria B. Dainiak, Vladimir I. Muronetz, Vladimir A. Izumrudov, Igor Yu. Galaev, and Bo Mattiasson</i>                                                                         | 58  |
| Generation of an AraC-araBAD Promoter-Regulated T7 Expression System                                                                                                  | <i>Diane R. Wycuff and Kathleen S. Matthews</i>                                                                                                                                  | 67  |
| Background Suppression in Frequency-Domain Fluorometry                                                                                                                | <i>Joseph R. Lakowicz, Ignacy Gryczynski, Zygmunt Gryczynski, and Michael L. Johnson</i>                                                                                         | 74  |
| Quantitative $\alpha$ -Ketoglutarate Dehydrogenase Activity Staining in Brain Sections and in Cultured Cells                                                          | <i>Larry C. H. Park, Noel Y. Calingasan, Kwan-Fu Rex Sheu, and Gary E. Gibson</i>                                                                                                | 86  |
| Structural Analysis of Cartilage Proteoglycans and Glycoproteins Using Matrix-Assisted Laser Desorption/Ionization Time-of-Flight Mass Spectrometry                   | <i>Joseph Zaia, Beishan Liu, Raymond Boynton, and Frank Barry</i>                                                                                                                | 94  |
| Ion-Pairing High-Performance Liquid Chromatographic Method for the Detection of N-Acetylaspartate and N-Acetylglutamate in Cerebral Tissue Extracts                   | <i>Barbara Tavazzi, Roberto Vagnozzi, Donato Di Pierro, Angela Maria Amorini, Giovanna Fazzina, Stefano Signoretti, Anthony Marmarou, Ignazio Caruso, and Giuseppe Lazzarino</i> | 104 |
| A Modular Set of Prokaryotic and Eukaryotic Expression Vectors                                                                                                        | <i>Karsten Melcher</i>                                                                                                                                                           | 109 |
| Quantitation of Gluconeogenesis by $^2\text{H}$ Nuclear Magnetic Resonance Analysis of Plasma Glucose Following Ingestion of $^2\text{H}_2\text{O}$                   | <i>John G. Jones, Rui A. Carvalho, A. Dean Sherry, and Craig R. Malloy</i>                                                                                                       | 121 |
| Microscale Synthesis of Dextran-Based Multivalent N-Linked Oligosaccharide Probes                                                                                     | <i>Naoei Yoshitani and Seiichi Takasaki</i>                                                                                                                                      | 127 |
| Ratiometric Assay of Epidermal Growth Factor Receptor Tyrosine Kinase Activation                                                                                      | <i>Kevin Schooler and H. Steven Wiley</i>                                                                                                                                        | 135 |
| Centrifugal Precipitation Chromatography: Principle, Apparatus, and Optimization of Key Parameters for Protein Fractionation by Ammonium Sulfate Precipitation        | <i>Yoichiro Ito</i>                                                                                                                                                              | 143 |

## NOTES & TIPS

|                                                                                                                        |                                            |     |
|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----|
| Standardization of Northern Blot Signals by Determination of Relative Poly(A) <sup>+</sup> RNA Amounts Loaded per Lane | <i>Pierre R. Provost and Yves Tremblay</i> | 154 |
|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----|



- PCR Amplification and Analysis of Simple Sequence Length Polymorphisms in Mouse DNA Using a Single Microchip Device *William C. Dunn, Stephen C. Jacobson, Larry C. Waters, Natalia Kroutchinina, Julia Khandurina, Robert S. Foote, Monica J. Justice, Lisa J. Stubbs, and J. Michael Ramsey* 157
- A Modified Serial Analysis of Gene Expression That Generates Longer Sequence Tags by Nonpalindromic Cohesive Linker Ligation *Akihito Ryo, Nobuo Kondoh, Toru Wakatsuki, Akiyuki Hada, Naoki Yamamoto, and Mikio Yamamoto* 160
- Cloning Stress-Induced Genes from *Aspergillus niger* Using Polymerase Chain Reaction-Augmented Subtractive Hybridization *Adrian J. Watson, Jo Worley, Ruan M. Elliott, David J. Jeenes, and David B. Archer* 162

Number 2, January 15, 2000

## REVIEW

- Spectroscopic Methods for Analysis of Protein Secondary Structure *John T. Pelton and Larry R. McLean* 167

## REGULAR ARTICLES

- Phosphopeptide Sequencing by In-Source Decay Spectrum in Delayed Extraction Matrix-Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry *Tomoya Kinumi, Haruki Niwa, and Hiroyuki Matsumoto* 177
- Profiling Neurosteroids in Cerebrospinal Fluids and Plasma by Gas Chromatography/Electron Capture Negative Chemical Ionization Mass Spectrometry *Yang-Suk Kim, Hongjian Zhang, and Hee-Yong Kim* 187
- A Vesicle Capture Sensor Chip for Kinetic Analysis of Interactions with Membrane-Bound Receptors *Matthew A. Cooper, Anna Hansson, Stefan Löfås, and Dudley H. Williams* 196
- Analysis and Quantitation of Insect Juvenile Hormones Using Chemical Ionization Ion-Trap Mass Spectrometry *P. E. A. Teal, A. T. Proveaux, and R. R. Heath* 206
- Studies on the Fluorescence Reaction between Nucleic Acid and the Complex of Cobalt(II) with 5-(3-Fluoro-4-chlorophenylazo)-8-sulfonamidoquinoline and Its Applications *Qiu-E Cao, Yunkun Zhao, Yunyuan Xu, Changzheng Li, Zhide Hu, and Qiheng Xu* 214
- Characterization of a Biological Detector Cell for Quantitation of Inositol 1,4,5-Trisphosphate *Veronica Luzzi, Dilyara Murtazina, and Nancy L. Allbritton* 221
- Fluorometric Assay of Turnip Mosaic Virus NIa Protease *Hyun Yee Yoon, Kwan Yong Choi, and Byeong Doo Song* 228
- Chloramine-T in Radiolabeling Techniques. III. Radioiodination of Biomolecules Containing Thioether Groups *Akihiro Yamada, Ashraf Traboulsi, Lewis W. Dittert, and Anwar A. Hussain* 232
- Introduction of Chloramphenicol Resistance into the Modified Mouse Mitochondrial Genome: Cloning of Unstable Sequences by Passage through Yeast *Brian Bigger, Oleg Tolmachov, Jean-Marc Collombet, and Charles Coutelle* 236
- Studies on the Protonation Constants and Solvation of  $\alpha$ -Amino Acids in Dioxan-Water Mixtures *Fitnat Köseoglu, Esma Kiliç, and Alev Dogan* 243
- Yeast Two-Hybrid Assay for Examining Human Immunodeficiency Virus Protease Heterodimer Formation with Dominant-Negative Inhibitors and Multidrug-Resistant Variants *Stephen Todd, Martha C. A. Laboissière, and Charles S. Craik* 247

- Use of Biotin-Labeled Nucleic Acids for Protein Purification and Agarose-Based Chemiluminescent Electromobility Shift Assays  
*Joseph T. Rodgers, Pinky Patel, Jason L. Hennes, Sara L. Bolognia, and David P. Mascotti* 254
- Exact Analysis of Competition Ligand Binding by Displacement Isothermal Titration Calorimetry  
*Bent W. Sigurskjold* 260

#### NOTES & TIPS

- A Simple Method to Improve Spectral Quality in Matrix-Assisted Laser Desorption/Ionization–Time-of-Flight—Mass Spectrometric Analysis by Using Micro Mate Labeling Tape as a Sample Support  
*Z. Yan, G. W. Caldwell, W. J. Jones, and J. A. Masucci* 267
- Diagnostic Fragmentation of Saturated and Unsaturated Fatty Acids by Gas Chromatography–Mass Spectrometry with Pentafluorophenyldimethylsilyl Derivatization  
*Man Ho Choi and Bong Chul Chung* 271
- Growth of *Escherichia coli* on Medium Containing Glycine Increases Transformation Efficiency  
*M. Kalim Akhtar, Naheed Kaderbhai, and Mustak A. Kaderbhai* 273
- Large-Scale Production of Procollagen I from Chick Embryo Tendon Fibroblasts  
*Raquel Martin, Jean Farjanel, Denise Eichenberger, Marie-Madeleine Giraud-Guille, and David J. S. Hulmes* 276
- Separation of Polymorphic Mixtures of Equally Sized Polymerase Chain Reaction Fragments by Southern Blot Analysis  
*Ester Piek, Bianca Heijdra, Francis van Horck, Emile Aben, Peter Zickert, and E. Joop van Zoelen* 278

---

Author Index for Volume 277

282

#### NOTICE

The Subject Index for Volume 277 will appear in the December 15, 2000, issue as part of a cumulative index for the year 2000.



